

Amendments to the Claims

Applicant presents claim amendments below indicating the changes with insertions indicated by underlining and deletions indicated by strikeouts and/or double bracketing.

Claims

1. (Original) A method of detecting one or more artifacts in a virtual image synthesized from stereo images, the method comprising:
 - generating a disparity map from the stereo images;
 - generating a projected image for each of the stereo images by projecting each stereo image into a target viewpoint based on the disparity map;
 - computing color-distances between corresponding pixels in the projected images to produce a difference map; and
 - designating one or more locations in the difference map associated with a computed color-distance exceeding a threshold as the one or more artifacts.

2. (Original) The method of claim 1 further comprising:
 - generating an occlusion map from the stereo images; and
 - combining the occlusion map into the projected image.
3. (Original) The method of claim 1 further comprising:
 - identifying an artifact pixel in the virtual image that corresponds with one of the artifacts;

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defining a source patch relative to the artifact pixel in the virtual image;
identifying a disparity point in the disparity map that corresponds to the artifact
pixel;

defining a disparity patch relative to the disparity point in the disparity map; and
generating a filter map from the source patch and the disparity patch.

4. (Original) The method of claim 3 wherein the filter map represents a
foreground filter map.

5. (Original) The method of claim 3 wherein the filter map represents a
background filter map.

6. (Original) The method of claim 3 further comprising:
filtering the disparity patch before generating the filter map.

7. (Original) The method of claim 1 further comprising:
generating a filter map from a source patch of the virtual image and a disparity patch of
the disparity map;
determining a candidate exemplar patch from each stereo image based on the filter
map.

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8. (Original) The method of claim 7 wherein the filter map represents a background filter map and further comprising:

filtering the source patch using the background filter map; and

selecting one of the candidate exemplar patches as an uncontaminated background exemplar patch based on comparison to the background-filtered source patch.

9. (Original) The method of claim 7 further comprising:

extracting an unoccluded background exemplar patch from an unoccluded foreground candidate exemplar patch;

approximating an occluded background exemplar patch from an occluded foreground candidate exemplar patch; and

determining an uncontaminated foreground exemplar patch from the unoccluded background exemplar patch and the occluded background exemplar patch.

10. (Original) The method of claim 9 further comprising:

determining a transparency weight from the unoccluded background exemplar patch and the occluded background exemplar patch.

11. (Original) The method of claim 7 further comprising:

generating a target patch as a composite of a background exemplar patch and a foreground exemplar patch.

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12. (Original) The method of claim 11 further comprising:
replacing the source patch of the virtual image with the target patch.
13. (Original) The method of claim 1 further comprising:
generating a target patch as a weighted average of a background exemplar patch and a foreground exemplar patch, based on a transparency weight.

14. (Currently Amended) A computer program product encoding a computer program for executing on a computer system a computer process for detecting one or more artifacts in a virtual image synthesized from stereo images, the computer process comprising:

generating a projected image for each of the stereo images by projecting each stereo image into a target viewpoint based on a disparity map of the stereo images;
computing differences between corresponding pixels in the projected images to produce a difference map, wherein a computed difference exceeding a threshold indicates an artifact;

generating an occlusion map from the stereo images; and

combining the occlusion map into the projected image.

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15. (Canceled)

16. (Currently Amended) ~~The computer program product of claim 14 wherein the computer process further comprises:~~

A computer program product encoding a computer program for executing on a computer system a computer process for detecting one or more artifacts in a virtual image synthesized from stereo images, the computer process comprising:

generating a projected image for each of the stereo images by projecting each stereo image into a target viewpoint based on a disparity map of the stereo images;

computing differences between corresponding pixels in the projected images to produce a difference map, wherein a computed difference exceeding a threshold indicates an artifact;

identifying an artifact pixel in the virtual image that corresponds with one of the artifacts;

defining a source patch relative to the artifact pixel in the virtual image; identifying a disparity point in the disparity map that corresponds to the artifact pixel;

defining a disparity patch relative to the disparity point in the disparity map; and generating a filter map from the source patch and the disparity patch.

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17. (Original) The computer program product of claim 16 wherein the filter map represents a foreground filter map.

18. (Original) The computer program product of claim 16 wherein the filter map represents a background filter map.

19. (Original) The computer program product of claim 16 wherein the computer process further comprises:

filtering the disparity patch before generating the filter map.

20. (Currently Amended) ~~The computer program product of claim 14 wherein the computer process further comprises:~~

A computer program product encoding a computer program for executing on a computer system a computer process for detecting one or more artifacts in a virtual image synthesized from stereo images, the computer process comprising:

generating a projected image for each of the stereo images by projecting each stereo image into a target viewpoint based on a disparity map of the stereo images;

computing differences between corresponding pixels in the projected images to produce a difference map, wherein a computed difference exceeding a threshold indicates an artifact;

generating a filter map from a source patch of the virtual image and a disparity patch of the disparity map; and

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determining a candidate exemplar patch from each stereo image based on the filter map.

21. (Original) The computer program product of claim 20 wherein the filter map represents a background filter map and the computer process further comprises:

filtering the source patch using the background filter map; and

selecting one of the candidate exemplar patches as an uncontaminated background exemplar patch based on comparison to the background-filtered source patch.

22. (Original) The computer program product of claim 20 wherein the computer process further comprises:

extracting an unoccluded background exemplar patch from an unoccluded foreground candidate exemplar patch;

approximating an occluded background exemplar patch from an occluded foreground candidate exemplar patch; and

determining an uncontaminated foreground exemplar patch from the unoccluded background exemplar patch and the occluded background exemplar patch.

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23. (Original) The computer program product of claim 22 wherein the computer process further comprises:

determining a transparency weight from the unoccluded background exemplar patch and the occluded background exemplar patch.

24. (Original) The computer program product of claim 20 wherein the computer process further comprises:

generating a target patch as a composite of a background exemplar patch and a foreground exemplar patch.

25. (Original) The computer program product of claim 24 wherein the computer process further comprises:

replacing the source patch of the virtual image with the target patch.

26. (Original) The computer program product of claim 14 wherein the computer process further comprises:

generating a target patch as a weighted average of a background exemplar patch and a foreground exemplar patch, based on a transparency weight.

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27. (Original) A system for detecting one or more artifacts in a virtual image synthesized from stereo images, the system comprising:

an image warp module that generates a projected image for each of the stereo images by projecting each stereo image into a target viewpoint based on a disparity map of the stereo images;

an image distancing module that computes color-distances between corresponding pixels in the projected images to produce a difference map; and

a thresholding module that designates one or more locations in the difference map associated with a computed color-distance exceeding a threshold as the one or more artifacts.

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